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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/822,576	03/30/2001	Sumihito Morita	9281-3965	7194

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CHICAGO, IL 60611

EXAMINER

DAVIS, DAVID DONALD

ART UNIT	PAPER NUMBER
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2652

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DATE MAILED: 10/06/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/822,576	MORITA ET AL.	
	Examiner	Art Unit	
	David D. Davis	2652	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on _____.
 - 2a) This action is **FINAL**. 2b) This action is non-final.
 - 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.
- Disposition of Claims**
- 4) Claim(s) 1-12 is/are pending in the application.
 - 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 - 5) Claim(s) _____ is/are allowed.
 - 6) Claim(s) 1-12 is/are rejected.
 - 7) Claim(s) _____ is/are objected to.
 - 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) The proposed drawing correction filed on _____ is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) All
 - b) Some *
 - c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
 - a) The translation of the foreign language provisional application has been received.
- 15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) <u>3</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. Receipt is acknowledged of the Information Disclosure Statement (IDS) received March 30, 2001.

Specification

3. The disclosure is objected to because of the following informalities: on page 13, line 18, "york" should be --yoke--..

Appropriate correction is required.

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

5. Claims 1-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as

the invention. Specifically, in lines 15 and 16 “the front end portion” is indefinite because it lacks antecedent basis. Similar indefiniteness exists in claims 7 and 8.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-3 and 6-10 are rejected under 35 U.S.C. 102(e) as being anticipated by Ahagon et al (US 6,407,885). As per claim 1, Ahagon et al shows in figure 34 a thin-film magnetic head including an upper magnetic core layer 8. A lower magnetic core layer 141 is arranged to be opposed to the upper magnetic core layer 8. An electrically conductive coil layer 6/7 is sandwiched between the upper magnetic core layer 8 and the lower magnetic core layer 141. A first insulator layer 142/211 is sandwiched between the lower magnetic core layer 141 and the electrically conductive coil layer 6/7 for electrically insulating the lower magnetic core layer 141 from the electrically conductive coil layer 6/7.

A second insulator layer 311 is sandwiched between the upper magnetic core layer 8 and the electrically conductive coil layer 6/7 for electrically insulating the upper magnetic core layer 8 from the electrically conductive coil layer 6/7. The first insulator layer 142/211 is arranged on the lower magnetic core layer 141 except the front end portion of the lower magnetic core layer

141 facing the front end portion of the upper magnetic core layer 8. A lower magnetic pole layer 163 has a thickness equal to that of the first insulator layer 142/211 and is arranged in continuity with the end of the first insulator layer 142/211 on the front end portion of the lower magnetic core layer 141 between the upper magnetic core layer 8 and the lower magnetic core layer 141. The front end portion of the upper magnetic core layer 8/195 is arranged on a gap layer 184 on the lower magnetic pole layer 163, and the second insulator layer 311 is positioned behind the lower magnetic pole layer 163 and close to the back end of the upper magnetic core layer 8.

As per claim 2, Ahagon et al shows in figure 34 the first insulator layer 142/211 comprises a recess for receiving the electrically conductive coil layer 6/7 and arranged at a predetermined distance from the lower magnetic pole layer 163 between the lower magnetic pole layer 163 and the back end portion of the upper magnetic core layer 8. As per claim 3, Ahagon et al shows in figure 36 the upper magnetic core layer 8 including a narrow-width pole region with the end portion thereof formed on the gap layer 184 on the lower magnetic pole layer 163. Also shown in figure 36 is a yoke region being wider in width than the pole region, arranged in continuity with the back end of the pole region. The back end of the pole region is opposed to the first insulator layer 142/211 is between the lower magnetic pole layer 163 and the recess.

As per claim 6, Ahagon et al shows in figure 34 and describes in column 11, lines 29-64 that the lower magnetic core layer 141 also serves as a top shield layer of a magnetoresistive head for reading information from a magnetic recording medium.

As per claim 7, Ahagon et al discloses a method for manufacturing a thin-film magnetic head as shown in figure 34 including a step of forming a lower magnetic pole layer 163 on a lower magnetic core layer 141. A step of forming a first insulator layer 142/211 on the lower

magnetic core layer 141 in a manner such that the first insulator layer 142/211 is arranged in continuity with the back end of the lower magnetic pole layer 163. Ahagon et al also discloses and shows in figure 34 a step of polishing the first insulator layer 142/211 so that the thickness of the first insulator layer 142/211 is equal to the thickness of the lower magnetic pole layer 163. A step of forming a recess in the first insulator layer 142/211 and a step of forming a gap layer 184 on the lower magnetic pole layer 163 and the first insulator layer 142/211 in a manner such that the gap layer 184 extends into the recess is additionally disclosed by Ahagon et al. A step of forming an electrically conductive coil layer 6/7 on the gap layer 184 formed in the recess and a step of forming a second insulator layer 311 for covering the electrically conductive coil layer 6/7 on the gap layer 184 so that the front end portion of the second insulator layer 311 is positioned behind the lower magnetic pole layer 163 is further disclosed by and shown in figure 34 of Ahagon et al. Furthermore, Ahagon et al discloses and shows in figure 34 a step of forming an upper magnetic core layer 8 on the second insulator layer 311 and the gap layer 184

As per claim 8, Ahagon et al shows in figure 34 a thin-film magnetic head including a lower magnetic core layer 141, and a lower magnetic pole layer 163 formed on the lower magnetic core layer 141. A non-magnetic gap layer 184 is formed at least on the lower magnetic pole layer 163, and an upper magnetic core layer 8 is on the gap layer 184 in a surface facing a recording medium. A coil layer 6/7 is formed behind the lower magnetic layer in the direction of height for inducing a recording magnetic field in the lower magnetic core layer 141 and the upper magnetic core layer 8.

The upper magnetic core layer 8 includes a front end region having a track width and exposed on the surface facing the recording medium, and a backward region extending backward

from the back end of the front end region in the direction of height. The backward region has the width widening as the upper magnetic core layer 8 runs backward, as shown in figure 36.

A planarizing insulator layer 142/211 is formed to keep in the direction of height a flat surface at the same level in continuity with the top surface of the lower magnetic pole layer 163. The planarizing insulator layer 142/211 has a flat surface remaining constant in level and a downwardly inclined surface so that the planarizing insulator layer 142/211 is gradually thinner toward the backward end thereof. The flat surface is higher in level than a coil layer 6/7 formation surface on which the coil layer 6/7 is formed and lower in level than a top surface of the coil layer 6/7.

As per claim 9, Ahagon et al shows in figure 34 the coil layer 6/7 formed directly on the planarizing insulator layer 142/211 extending backward in the direction of height or on the gap layer 184 formed on the planarizing insulator layer 142/211. As per claim 10, Ahagon et al also discloses in column 11, lines 29-64 that the lower magnetic pole layer 163 is higher in saturation flux density than the lower magnetic core layer 141.

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various

claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 4-5 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ahagon et al (US 6,407,885) in view of Yoda et al (US 5,872,693). Ahagon et al discloses the claimed invention. See description, supra. However, Ahagon et al is silent as to each of the upper magnetic core layer and the lower magnetic pole layer being of a dual-layer or laminate structure. Ahagon et al is also silent as to the gap layer extending between a conductive layer and an insulator layer.

Yoda et al shows in figure 1, for example, pole and core layers 16 and 14 being dual-layer laminate structure and the gap layer 15 extending between a conductive layer and an insulator layer.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the pole and core layers of Ahagon et al with dual-layer or laminate structures and the gap layer extending between a conductive layer and an insulator layer as taught by Yoda et al. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been motivated to provide a dual-layer or laminate structure so as "to provide a narrow track fit for the accuracy of up to 10 Gb/inch² to be formed thereon while satisfying both dimensional tolerance and adaptability for mass production." See column 3, lines 22-28 of Yoda et al.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is (703) 308-1503. The examiner can normally be reached on Mon., Tues., Thurs. and Fri. between 7:30-6:00. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900. Any other inquiry should be directed to the customer service center whose telephone number is (703) 306-0377.



David D. Davis
Primary Examiner
Art Unit 2652

ddd
September 30, 2003